Having described the invention, what is claimed is:

1. A tweeter comprising:

a light, freely carried thin sandwich plate (3, 20, 39, 60) which can be excited into multiple reflected bending waves; and

at least one driver (1, 13, 14, 15, 26, 27, 28, 40, 41) which makes vibrating contact with and excites the sandwich plate (3, 20, 39, 60),

wherein the driver (1, 13, 14, 15, 26, 27, 28, 40, 41) is designed to excite at higher sound frequencies, the sandwich plate (3, 20, 39, 60) is designed for the propagation of bending waves with low damping, the sandwich plate (3, 20, 39, 60) is freely supported by holding elements (12, 24, 25, 34, 35) with low damping, and that the holding elements (12, 24, 25, 34, 35) are designed to be low damping at higher sound frequencies.

Sub a1

2. A tweeter as claimed in claim 1, wherein the sandwich plate (3) has two thin, hard cover plates (9, 10) with a shear resistant, thin core layer (11) placed between them.

3. A tweeter as claimed in claim 2, wherein the core layer (11) has a honeycomb structure.

4. A tweeter as claimed in claim 3, wherein the core layer (11) contains a spatially different distribution of the elasto-mechanical properties.

5. A tweeter as claimed in claim 4, wherein zonal thinning and/or cutouts (53 to 55) are provided in the core layer and/or the cover layers.

6. A tweeter as claimed in claim 5, wherein the size and arrangement of the zones (53 to 55) is such that a

basic pattern is always repeated in a reduced scale, and is again repeated in these smaller structures.

7. A tweeter as claimed in claim 6, wherein the core layer (29) includes a foil which contains periodically repeated bulges (31) produced by embossing.

8. A tweeter as claimed in claim 7, wherein the shape, arrangement and direction of the bulges is such that the maximum shear resistance is obtained in all moment directions.

Sub a1

9. A tweeter as claimed in claim 8, wherein the bulges are knobs (49, 50) in the form of a square based, four-sided pyramid, and the knobs (49, 50) are arranged to face in the same direction in strictly periodic, closely adjacent straight rows (47, 48), where each second row (48) alternatingly contains knobs in the opposite direction, and each row (47) is offset by half a knob (49, 50) with respect to the neighboring rows (48).

10. A tweeter as claimed in claim 9, wherein the holding elements (12, 24, 25, 34, 35) are suitable to be placed or inserted into a larger support structure (36).

11. A tweeter as claimed in claim 10, wherein one side of the holding elements is attached with a brittle-hard adhesive to the sandwich plate, and the other side is connected to the support structure.

12. A tweeter as claimed in claim 11, wherein the holding elements have edges, and that the edges are cemented in a brittle-hard manner to a cutout in the support structure.

13. A tweeter as claimed in claim 12, wherein the back side of the driver (40, 41, 46, 47) is designed as a holding element.

14. A tweeter as claimed in claim 13, wherein the plate diaphragm of a deep and/or medium sound plate loudspeaker is designed as a support structure (36).

15. A tweeter as claimed in claim 7, wherein the core layer (29) includes a foil which contains periodically repeated bulges (31) produced by embossing.

16. A tweeter as claimed in claim 7, wherein the bulges are knobs (49, 50) in the form of a square based, four-sided pyramid, and the knobs (49, 50) are arranged to face in the same direction in strictly periodic, closely adjacent straight rows (47, 48), where each second row (48) alternatingly contains knobs in the opposite direction, and each row (47) is offset by half a knob (49, 50) with respect to the neighboring rows (48).

17. A tweeter as claimed in claim 1, wherein the holding elements (12, 24, 25, 34, 35) are suitable to be placed or inserted into a larger support structure (36).

18. A tweeter as claimed in claim 17, wherein one side of the holding elements is attached with a brittle-hard adhesive to the sandwich plate, and the other side is connected to the support structure.

19. A tweeter as claimed in claim 18, wherein the holding elements have edges, and that the edges are cemented in a brittle-hard manner to a cutout in the support structure.

20. A tweeter as claimed in claim 17, wherein the back side of the driver (40, 41, 46, 47) is designed as a holding element.

21. A tweeter as claimed in claim 17, wherein the plate diaphragm of a deep and/or medium sound plate loudspeaker is designed as a support structure (36).

22. A tweeter as claimed in claim 2, wherein the core layer (11) contains a spatially different distribution of the elasto-mechanical properties.